

# Notice of Allowability

Application No.

10/824,694

Examiner

Quang N. Vo

Applicant(s)

ITO ET AL.

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/14/2004.
2. ☒ The allowed claim(s) is/are 1-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

KING Y. POON

SUPERVISORY PATENT EXAMINER

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Peter B. Martine on 9/27/2007.

The application has been amended (underlined portions) as follows:

In claim 7:

A computer-readable medium encoded with a computer executable program or instructions which enables the computer to realize the capability of determining lattice points to be referenced to prepare correspondence defining data that defines correspondence between an amount of each ink used by a printing apparatus and a color component value in a color system, said computer-executable program or instructions comprising: a feature to record in a prescribed recording medium the original correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space prescribed by less color components than the number of inks and the lattice points for ink amount in the ink amount space and to acquire correspondence between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space by referencing the original correspondence defining data; a feature to calculate a smoothness evaluation function which evaluates the smoothness of arrangement of

lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space; a feature to optimize the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied; and a feature to reference the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data.

In claim 10:

A computer-readable medium encoded with a computer executable print  
controlling program or instructions which enables the computer to realize the capability of generating printing data which permits printing by referencing correspondence defining data that defines correspondence between an amount of each ink used by a printing apparatus and a color component value in a color system and converting the color component value in the color system into an amount of ink, which is characterized in that: the correspondence defining data is one which is prepared by referencing the original correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space prescribed by less color components than the number of inks and the lattice points for ink amount in the ink

amount space, thereby acquiring correspondence between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space, prescribing a smoothness evaluation function which evaluates the smoothness of arrangement of lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space, optimizing the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied, referencing the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data to establish the lattice points for preparing the correspondence defining data, and associating.

In claim 13:

A computer-readable medium encoded with a computer executable color converting program or instructions which references correspondence defining data that defines correspondence between an amount of each ink used by a printing apparatus and a color component value in a color system, thereby converting the color component value in the color system into an amount of ink, which is characterized in that: the correspondence defining data is one which is prepared by referencing the original

correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space prescribed by less color components than the number of inks and the lattice points for ink amount in the ink amount space, thereby acquiring correspondence between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space, prescribing a smoothness evaluation function which evaluates the smoothness of arrangement of lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space, optimizing the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied, referencing the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data to establish the lattice points for preparing the correspondence defining data, and associating the amount of ink with the color component value in the other color system by means of the colorimetric value measured by using a prescribed colorimetry for the result of printing with the amount of ink prescribed by the lattice points to be referenced to prepare the correspondence defining data.

The following is an examiner's statement of reasons for allowance:

Claims 1-7 of the current application are allowed for the reasons of none of prior art of record teaches nor suggests "referencing the original correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space prescribed by less color components than the number of inks and the lattice points for ink amount in the ink amount space, thereby acquiring correspondence between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space; prescribing a smoothness evaluation function which evaluates the smoothness of arrangement of lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space; optimizing the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied; and referencing the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data."

Claims 8-10 of the current application are allowed for the reasons of none of prior art of record teaches nor suggests "a feature to record in a prescribed recording medium the original correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space

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prescribed by less color components than the number of inks and the lattice points for ink amount in the ink amount space and to acquire correspondence between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space by referencing the original correspondence defining data; a feature to calculate a smoothness evaluation function which evaluates the smoothness of arrangement of lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space; a feature to optimize the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied; and a feature to reference the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data."

Claims 11-13 of the current application are allowed for the reasons of none of prior art of record teaches nor suggests "the correspondence defining data is one which is prepared by referencing the original correspondence defining data which previously prescribes correspondence between the lattice points in the low-dimensional color space prescribed by less color components than the number of inks and the lattice points for ink amount in the ink amount space, thereby acquiring correspondence

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between the lattice points in the low-dimensional color space and the lattice points in the device-independent color space, prescribing a smoothness evaluation function which evaluates the smoothness of arrangement of lattice points in the device-independent color space and contains a constraint condition that the arrangement of lattice points becomes nonuniform at a certain position in the device-independent color space and which has as a variable the lattice point position information in the low-dimensional color space, optimizing the arrangement of lattice points in the device-independent color-space by improving the rating of the smoothness evaluation function, with the lattice point position information in the low-dimensional color space varied, referencing the original correspondence defining data, thereby associating the amount of each ink corresponding to the lattice points in the low-dimensional color space in the optimized state with the lattice points in the low-dimensional color space prescribed by the original correspondence defining data to establish the lattice points for preparing the correspondence defining data, and associating the amount of ink with the color component value in the color system by means of the calorimetric value measured by using a prescribed colorimetry for the result of printing with the amount of ink prescribed by the lattice points to be referenced to prepare the correspondence defining data."

The closest prior art Bhattacharjya et al. (US 6,546,132 B1), discloses a fast method of text enhancement by manipulating the color transformation tables rather than scanning and filtering the entire image, either singularly or in combination with other cited reference ~~obvious~~ fails to anticipate or render the above limitations.

*obvious*



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Quang N. Vo 9/27/07  
Patent Examiner



KING Y. POON  
SUPERVISORY PATENT EXAMINER